# Amendments to the Claims

Claim 1: (Currently Amended) A communication system having remote power amplifier linearization, said system comprising:

at least one user radio having a power amplifier linearizer that applies a transfer function to a modulated data stream, is coupled to a power amplifier, and is configured to transmit a communication signal generated by said power amplifier of said user radio; and

a hub radio configured to receive said communication signal transmitted from said at least one user radio, to generate a signal quality measurement for said communication signal, to formulate commands in response to said signal quality measurement for said communication signal, and to transmit said ~~commands; wherein~~ commands, wherein said one user radio is further configured to adjust said transfer function of said power amplifier linearizer of said user radio in response to one of said commands so that said user radio power amplifier becomes remotely linearized.

Claim 2: (Original) A communication system as claimed in claim 1 wherein said hub radio is further configured to monitor a parameter of said communication signal received from said user radio at a plurality of points in time and to form said signal quality measurement for said communication signal in response to expressions of said parameter at each of said plurality of points in time to ameliorate the influence of noise.

Claim 3: (Currently Amended) A communication system as claimed in claim 1 ~~wherein: said~~ wherein:

said communication system is a digital communication system in which, during each of a series of unit intervals, information

is conveyed as a constellation point selected from a constellation of quadrature phase points; and

said hub radio is configured to form said signal quality measurement from baseband quadrature constellation points.

Claim 4: (Original) A communication system as claimed in claim 3 wherein said baseband quadrature constellation points are actual received constellation points and said hub radio is further configured to determine ideal constellation points and to calculate differences between said ideal constellation points and said actual received constellation points so that said signal quality measurements are responsive to magnitudes and phases of said differences.

Claim 5: (Original) A communication system as claimed in claim 1 wherein:

said hub radio comprises a power amplifier for use in communicating with said user radios; and

said hub radio power amplifier is locally linearized.

Claim 6: (Currently Amended) A communication system as claimed in claim 1 wherein:

said communication signals transmitted from said user radio conveys user payload data and system control data; and

said hub radio is configured to generate said signal quality measurement while said communication signal ~~transmit~~ transmits said user payload data.

Claim 7: (Original) A hub radio for use in a communication system having remote power amplifier linearization, said hub radio comprising:

a receiver section configured to receive a wireless communication signal and to generate a signal quality measurement that is responsive to said communication signal;

a controller configured to estimate a power amplifier linearizer transfer function in response to said signal quality measurement and to formulate a command in response to said estimated power amplifier linearizer transfer function; and

a transmitter section configured to wirelessly transmit said command.

Claim 8: (Currently Amended) A hub radio as claimed in claim 7 wherein said receiver section monitors ~~a parameters~~ parameters of said communication signal at a plurality of points in time and forms said signal quality measurement in response to an expression of said parameters at each of said plurality of points in time to ameliorate the influence of noise.

Claim 9: (Original) A hub radio as claimed in claim 7 wherein:

said communication signal conveys information during each of a series of unit intervals as a constellation point selected from a constellation of quadrature phase points; and

said receiver section forms said signal quality measurement from baseband quadrature constellation points.

Claim 10: (Original) A hub radio as claimed in claim 9 wherein said baseband quadrature constellation points are actual received constellation points and at least one of said receiver section and said controller is configured to determine ideal constellation points and calculate differences between said ideal constellation points and said actual received constellation points.

Claim 11: (Original) A hub radio as claimed in claim 10 wherein said signal quality measurement is responsive to magnitudes of said differences.

Claim 12: (Currently Amended) A hub radio as claimed in claim 7 wherein said transmitter section comprises:

a power amplifier linearizer adapted to apply a transfer function to a modulated data stream and to generate a linearized data stream;

~~an power~~ a power amplifier configured to amplify said linearized data stream; and

a local linearization analysis section coupled to said power amplifier linearizer and to said power amplifier to locally linearize said power amplifier.

Claim 13: (Original) A hub radio as claimed in claim 12 additionally comprising a coupler between an output of said power amplifier and an input of said receiver section for calibrating non-linearity in said receiver section.

Claim 14: (Original) A user radio for use in a communication system having remote power amplifier linearization, said user radio comprising:

a power amplifier linearizer adapted to apply a transfer function to a modulated data stream and generate a linearized data stream;

a power amplifier configured to amplify said linearized data stream and generate a communication signal;

a receiver section adapted to receive commands from outside said user radio via wireless communication; and

a controller coupled to said receiver and said power amplifier linearizer, said controller being configured to adjust

said transfer function in response to said commands so that said power amplifier becomes remotely linearized.

Claim 15: (Original) In a communication system, a method for remote power amplifier linearization used in generating a communication signal transmitted from a first site for receipt at a second site, said method comprising:

a) receiving said communication signal at said second site;

b) generating a signal quality measurement at said second site, said signal quality measurement being determined from said communication signal received in said receiving activity a);

c) formulating a command at said second site in response to said signal quality measurement;

d) transmitting said command from said second site;

e) receiving said command at said first site;

f) adjusting, at said first site in response to said command, a transfer function applied to a modulated data stream by a power amplifier linearizer;

g) linearizing said modulated data stream in said power amplifier linearizer to generate a linearized data stream;

h) amplifying said linearized data stream in a power amplifier to generate said communication signal; and

i) transmitting said communication signal from said first site.

Claim 16: (Original) A method as claimed in claim 15 wherein said generating activity b) monitors parameters of said communication signal at a plurality of points in time and forms said signal quality measurement in response to expressions of said parameters at each of said plurality of points in time to ameliorate the influence of noise.

Claim 17: (Original) A method as claimed in claim 15 wherein:

said communication system is a digital communication system in which, during each of a series of unit intervals, information is conveyed as a constellation point selected from a constellation of quadrature phase points; and

said generating activity b) forms said signal quality measurement from baseband quadrature constellation points.

Claim 18: (Original) A method as claimed in claim 17 wherein said baseband quadrature constellation points are actual received constellation points and said generating activity b) comprises:

obtaining ideal constellation points; and

calculating differences between said ideal constellation points and said actual received constellation points.

Claim 19: (Original) A method as claimed in claim 18 wherein said signal quality measurement is responsive to magnitudes and phases of said differences.

Claim 20: (Original) A method as claimed in claim 15 additionally comprising:

achieving carrier synchronization at said second site prior to said formulating activity c); and

achieving symbol synchronization at said second site prior to said formulating activity c).

Claim 21: (Currently Amended) A method as claimed in claim 15 wherein:

said receiving activity a) receives said communication signal at a receiver section located at said second site;

said method additionally comprises receiving a ~~locally-generated~~ <u>locally generated</u> calibration signal at said receiver section to determine non-linearity of said receiver;

said method additionally comprises generating said signal quality measurement for said ~~locally-generated~~ locally generated calibration signal received at said receiver section; and

said formulating activity c) comprises compensating for said non-linearity of said receiver in formulating said command, said compensating activity occurring in response to said signal quality measurement for said ~~locally-generated~~ locally generated calibration signal.

Claim 22: (Original) A method as claimed in claim 15 wherein, at said second site, a power amplifier linearizer has an output coupled to a power amplifier input, and said method additionally comprises locally linearizing said second site power amplifier.

Claim 23: (Original) A method as claimed in claim 15 wherein:

said activities a) - i) form a linearization feedback loop process which repeats to track changes in power amplifier linearization;

during an earlier iteration of said linearization feedback loop process said communication signal is transmitted from said first site at a first power level and a first energy per bit level; and

during a later iteration of said linearization feedback loop process said communication signal is transmitted from said first site at a second power level and a second energy per bit level, said second power level being greater than said first power level and said second energy per bit level being less than said first energy per bit level.

Claim 24: (Original) A method as claimed in claim 23 wherein said later iteration of said linearization feedback loop process occurs after a signal quality statistic derived from signal

quality measurement indicates that said communication signal is in compliance with a predetermined spectral template.

Claim 25: (Original) A method as claimed in claim 15 wherein:

said activities a) - i) form a linearization feedback loop process;

said communication signal conveys user payload data and system control data at different times; and

said linearization feedback loop process takes place while said communication signal conveys user payload data.

Claim 26: (Original) A method as claimed in claim 15 wherein said communication signal is a first communication signal, said communication system includes a third site that transmits a second communication signal for receipt at said second site, and said method additionally comprises:

receiving said second communication signal at said second site;

generating, at said second site, a second signal quality measurement determined from said second communication signal;

formulating a second command at said second site in response to said second signal quality measurement;

transmitting said second command from said second site;

receiving said second command at said third site;

adjusting, at said third site in response to said second command, a second transfer function applied to a second modulated data stream by a second power amplifier linearizer;

linearizing said second modulated data stream in said second power amplifier linearizer to generate a second linearized data stream;

amplifying said second linearized data stream in a second power amplifier at said third site to generate said second communication signal; and

transmitting said second communication signal from said third site.